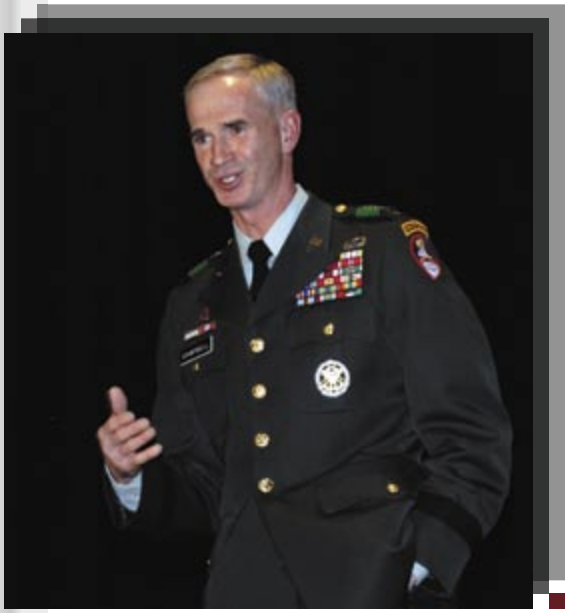
ASYMMETRICAL CHALLENGES

TECHNOLOGY IN AN ERA OF PERSISTENT CONFLICT

The following edited text was taken from a presentation given by U.S. Army Space and Missile Defense Command/Army Forces Strategic Command's Commanding General, LTG Kevin T. Campbell, at the 11th Annual SPACECOMM Defending America Symposium.



Today I will talk a bit about what's in my title. My job title has Space and missile defense in it. It is not so much geared to communications, but I think as a user, I'll talk a bit about the communications paths we depend on to run our particular system.

In my introduction, some of my previous assignments were mentioned, but I'm really most proud of my time at U.S. Strategic Command as the chief of staff for three and a half years. Anybody who's been a chief of staff knows it's an interesting job.

Before I get into talking about Space and missile defense, I want to just take a moment and talk about your Army … an Army that's deployed 247,000 strong around the globe today. Today in the theater of war, in Afghanistan and Iraq, we have about 138,000 of our men and women deployed there. It's keeping us somewhat out of balance in our ability to meet every contingency. The Army does have a plan with the help of congress to field a larger Army over the next three years. And we think that by 2011, with some stabilization in Iraq, and what we see coming in Afghanistan that we'll be able to give our troopers more time at home. So it will look like boots on the ground for a year, and home for a minimum of two years. We think that's all achievable by 2011.

I just came back from Afghanistan and I am never surprised by what I see when I'm there talking with our Soldiers. They certainly find value in what they're doing. Their enlistment rates and reenlistment rates continue to remain at or above goals. It's

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almost counter intuitive. The young man that was driving us around was on his fifth tour in Afghanistan and happy to be there serving. I want to thank many of you in this audience for enabling our troops to do the jobs that they do, so thank you for your help.

Our Army chief of staff talks a lot about the environment in an era of persistent conflict for perhaps the next decade. We will be challenged asymmetrically, where hybrid threats such as irregular forces, terrorists, criminal elements combine and they create complex challenges. I really wanted to understand why do we foresee that there will be an era of persistent conflict?

I've read a couple books recently by Farid Zacharia, and it's title the "Post American World," and I'm in the midst of reading Freedman's new book, "Hot, Flat and Crowded," and I commend those books to you, because if some of the trends continue they described, we're going to be in competition for a lot of different things with a lot of different players that haven't been players heretofore. But just looking at what the trends would show us today, by 2030 there will be 50 percent more demand for energy. If you look at demographics, it may be more important to study demographics than terrorism.

Demographics: We're going to grow 60 million people a year until the year 2025. Sixty-five percent of the world will live in large cities. You look at Europe and Japan; they're going in the opposite direction. They stopped replacing their dead in Europe in 2007. So what's the implication? Will these nations as allies be willing to invest their treasure, their treasure being their young men and women, as they have a shrinking population?

The U.S. is projected to grow from 13 to 23 trillion over the next 25 years; China, 2 to 16 trillion over the next 25 years; Japan, 5 to 7 trillion; India, 2 to 5 trillion; Indonesia, Russia, France, Germany, on the order of 4 to 5 trillion; and Brazil, Vietnam, Egypt are all on growth paths. Okay, so what? The so what is we could be entering the period of rearmament around the world. There are a lot more dollars available to a lot more countries, and there could be more competitors being readied in the bull pen that we're going to have to face some time in the future.

If you looked at Gross Domestic Product alone, if that was the sole determinant of military power, China could field the forces we have today, equivalent forces, by the 2030s. That's pretty impressive. And as Zacharia describes in his book, it's not that America is getting any worse in what we do, it's just when we enter any competitive field he calls it the rise of the rest. That the Chinas, the Indias the Brazils, they're drawing even to us in many fields, and the technology's becoming available, and the funding is available to them to procure that technology. So, it's a very competitive world over the next forty years.

Just in technology, an iPod by 2020 will be able to hold the entire Library of Congress. A home computer in the 2030 timeframe could download the Library of Congress in 128 seconds. Well, so what? Well, technology may drive prices down. It becomes more available to people, allows them to communicate faster, and I think it'll complicate our lives when we are dealing with either terrorists or nation states.

So, I think the chief has it right that as we look into the future, the trends would say that there is much more competition for raw materials that are going to create problems for all of us. It's in this environment, where our men and women operate in complex terrain, where there's multiple cultures mixed in, and we're certainly in an environment now where our adversaries are poised and executing operations to deny us sanctuary, particularly in Space and in cyber. I think we are seeing that in spades today that they are laying down plans, they're talking about it publicly and we're seeing it in operations.

A recent unclassified report by the Defense Science Board said Space has ceased to be above the battle sanctuary. In an article written by Eric Sayers titled "China's Asymmetrical Strategy," he states that the Chinese strategists have written extensively on battlespace denial and they really see that the true dominance of the U.S. military is the result of our impressive network of command, control and communications. He goes on to say that the People's Liberation Army has concluded that attacking information systems could offset U.S. capabilities much more effectively than attacking combat systems. The DSP report goes on to say that the type of attacks, and we've seen this already at least in denial of global positioning system signals as well as

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satellite communications, we have a very limited capability to determine when we have been attacked or when there is an event occurring particularly against a Space system.

The Army's operational concept describes our concept as one where our commanders employ offensive, defensive and stability operations near simultaneous. Today we find brigade combat teams of roughly 5,000 Soldiers operating across sectors much larger than what we had during the Cold War, when we were occupying a patch of land perhaps about 100 square miles. A brigade combat team recently returned from Iraq was occupying an area they estimated was the size of New Jersey, so quite a change.

These are operations that are distributed. They're spread out where our Soldiers are making decisions on multiple planes: strategic level, tactical level, some with a military implication, others perhaps with a political or diplomatic implication. It's a collage of factions, cultures, chaos, fleeting advantages. It's where our NCOs and our junior officers operate independently. We recognize that it's at the squad, the company, and the battalion level where this fight is won or lost. It's our collective responsibility to empower them all the way at the far end of the spear. To give them the access to the information they need to conduct these operations and a sophisticated environment where tactical decisions have strategic implications.

The chief of staff of the Army has described the attributes he wants to see in our forces. He wants us to be versatile … move from the offense to the defense to stability rapidly; to be expeditionary; to respond to the unanticipated and operate in an austere environment; to be agile … that is to exploit their seams in complex environments whether that's cyber or physical; to be lethal, both using non-lethal means and lethal means; to be interoperable. We know that our forces can't achieve all that without Space capabilities and a lot of that is tied to communications paths. We know that terrestrial, airborne and even high altitude areas that we're starting to dabble in carry us only so far. We understand the profound impact that Space capabilities have on all aspects of our operations, and our leadership in Space is certainly being challenged. I think it's evident to all of us as Americans. In retaining our superiority, it's not just a military imperative, it's a national imperative.

The recently completed Allard Commission study found that our Space capabilities – and this is no surprise to anyone – they underpin our U.S. economic, technological and military leadership; that our global leadership is in jeopardy because global access to technology is leveling, that potential adversaries are gaining competitive advantages, and they observe the emergence of China as a Space power. That's sort of the "duh" observation, but nonetheless it's there. The commission members went on to say the U.S. military strategy, our concepts, our force structure, and our employment are all predicated on superior Space capabilities, and as we see an increased reliance on this, we know it's becoming a contested environment.

Bruce McDonald wrote in the Council on Foreign Relations Report, September 2008, that the People's Liberation Army envisions a conflict in Space, and they're preparing for it. Now at the same time we recognize these Space capabilities are foundational, we also recognize the potential vulnerability in exclusive dependencies.

We in our command are combing through the different layers. We're looking at terrestrial, airborne, high altitude as well as Space to better understand how a degree of adequate redundancy and complimenting capability can be achieved to preclude an overinvestment in one domain which creates vulnerability for our operating forces. We know that our forces can only be optimized when they're networked. I've described the size of the area that our forces are now operating in where previously you had Army divisions, now you have brigade combat teams. The networking is absolutely foundational to the success of that formation.

I think our Space systems and our CONOPS have to be designed to empower those operating in close contact, but not necessarily to the exclusion of others operating at the operational or the strategic levels. I think there's been some debate publicly that one size no longer fits all when it comes to Space. That may be right, but I still think that we can do a lot more with our concepts as we field national systems, as well as operational systems. If we get the CONOPS moving up front, we can do a better job of capturing the inherent capabilities that are onboard these Space platforms. And I think our CONOPS investment should match the hardware and software investment, and maybe not in terms strictly of dollars but perhaps in terms of our mental energy and time. We know the Air Force funds the lion's share of the operational Space-based capabilities, so it's through the CONOPS that the Army leverages the significant national investment in Space.

I really do believe our future challenges are going to be much more severe and we're certainly going to be operating in a contested environment both cyber and Space. I think only when we view these as contested environments can we adequately enable the users and make sure their needs are met.

It's really up to our Space combat developers and material developers to build the platforms in the sense that they're combat formations. Just like we look at a tank outfit or an infantry outfit, that we have to be able to self protect. We have to be able to detect, perhaps on Space platforms. We certainly need the ability to detect attacks. We perhaps need more fuel for maneuvering out of harm's way. But we have to start thinking like that given the challenges that I think will confront us in the years ahead of us.

In our service when we look at gaps related to Space, certainly at the top of the list is MILSATCOM, followed by intelligence, surveillance and reconnaissance, navigation and theater missile warning. I've described that our smaller tactical formations are taking on larger areas of responsibility and we're going to require protected communications, particularly for communications on the move because maneuver is a key element of surviving on the battlefield and knowing where the enemy is – knowing where we are and being able to pass that information quickly. So, we're going to need the bandwidth to support that while we're on the move, and certainly Space is going to help us with that. Unfortunately the demand just continues to rise and I don't think the pile on is going to stop anytime soon. Full motion video, very sophisticated graphics, video teleconferencing, collaborative planning tools … it's endless. There's more data, more info produced on the battlefield and I don't think MILSATCOM is going to be able to keep up with it at all. I think the national strategy has to take a hard look at incorporating commercial Space into our formations and it might reduce some of our vulnerability.

As an example of expanding pressure on the communications pipes, in an article by John Turpac in the January 2009 edition of the Air Force magazine, it states the Air Force plans to eventually field 197 predators, 352 reapers and 77 global hawks. I wanted to finish their sentence and say, "and 42 TSAT satellites to get at all this stuff."

Just in combat operations, we've seen an increase in predator combat air patrols of over 500 percent in over four years. So, there's a lot of stuff flying around the battlefield and there's going to be more stuff in the future in a more competitive environment. So, there's much work to be done when it comes to Satellite Communications, military or on the civil side.

In navigation, we find that the fight down at the squad level and the platoon level, with trying to tear this enemy away from the civilian population, we certainly need assured positioning, navigation and terrain, and it needs to be more accurate.

When it comes to intelligence, surveillance and reconnaissance, we've seen the proliferation of these tactical unmanned aerial vehicles and the reason we have to have that information directly down linked; we have to have it taskable to the ground commander because information today can't go through a bent pipe that becomes anything meaningful to Private Campbell who's standing out in front of a house about ready to get inside that house and find out what's going on in there. It's got to be very, very near real-time for that Soldier operating on the front lines.

In theater missile warning, we've been working with direct downlinks into theater for years. We're trying to take a look at how we can distribute that information broadly over an internet protocol network because I think it's a little too stove piped right now and too dependent on one communications means.

In the areas of friendly force tracking – blue force tracking – today our command does a lot of work creating a common operational picture for commandeers. The problem is we have different protocols, we have different hardware and software versions in the field, so we're doing a lot of middleware work. It's not the most efficient or optimized way to provide a blue force tracking picture, and there is much work to be done on developing standards and protocols.

I think we have a fairly good grip on our gaps and I think we understand the likely context of future battles. As a Space community, these are the areas I think need intense focus so we can make informed decisions about CONOPS and next generation systems. I think understanding this may even help us with the Department of Defense's Operationally Responsive Space initiative and what we think should come out of that. In any case, whatever we do as a nation, particularly when you're in the Space domain where things are very costly, we have to look for unified action and be able to take full advantage of all those capabilities on those platforms.

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There is some good news. There is some progress when it comes to MILSATCOM. Many of you are aware we launched the first Wideband Global SATCOM Satellite last year. We're getting ready to put the second one up. We had some very promising results from that first one, and I think as we look deeper into the future, as we continue to wrestle with TSAT, we may want to take a very hard look at WGS if it continues as it has very successfully, and just think about maybe adding some capability on that platform. Perhaps anti-jam spread spectrum, and perhaps expanding that constellation. Again we'll have to see how the TSAT program moves ahead. We will certainly need high-capacity communications as I've described, in the future, and protected communications down to our tactical formations.

In navigation we have GPS III coming around the corner. I think that's going to bring quite a bit more capability to the warfighter, so we're pleased to see what's coming there. It gives us some significant advantages in navigation warfare given that we'll have more competition in putting that on.

In terms of intelligence, surveillance and reconnaissance, one area I've asked our team to focus on with the Air Force, with all the stake holders in the intelligence, surveillance and reconnaissance community is the overhead non-imaging infrared. We see great promises in the sensors that are coming with the Space-based infrared system, so we've taken it upon ourselves with the help of some graybeards, to form a team to develop a CONOPS for the use of this very advanced capability that we think the Space-based Infrared System is going to deliver. There's a lot of inherent capability on that sensor if we can produce the software in the ground suites that are going to be advantageous to all commanders, whether you're ground, air or at sea. I think that we've got a lot of work there to do to capture that.

I mentioned theater missile warning … we want to get that communications network into an IP protocol so that we can pass that to all the disadvantaged users and not be reliant on one path.

In friendly force tracking, again we have to develop a number of protocols, standardized hardware and software if we're going to optimize the blue force tracking business on behalf of the COCOMs.

In terms of Operationally Responsive Space, we've stuck our finger into that one and we've taken a look at some very small satellites that we think we can build inside a year and can launch inside a year that can meet a communication need for a combatant commander. So, if our plan comes to fruition, we're hoping in this year, 2009, that we'd launch a small number of these nano-satellites and put them into Space as a demonstration for a combatant commander. Again it's in the communications realm that we'll be operating those. If successful, then we hope to go back to Operationally Responsive Space, to OSD in the executive agency if we can push that program along. Again, I look back at the charter of why the Operationally Responsive Space entity was stood up and it's directed to provide responsive Space to the Joint Task Force commander, the men and women who are out there fighting those wars.

Let me shift direction for a minute. The other name in my title is missile defense, so I'm obligated to talk a bit about that. And again, both these domains are very communication-centric, especially as you start to field a system in missile defense that is truly global, that places sensors, shooter, command and control literally around the globe in every combatant commander's backyard.

We've had some good success in 2008. You've probably read in the paper that the United States government is trying to expand and push missile defense into the European Theater, into both Poland and the Czech Republic. There have been some minor difficulties with Russian in negotiating our forward presence. I'm not sure where the new administration will take that. That's really not my business. My business is to establish the site in Poland and get that up and running once the administration tells us that we have a green light to go and do that. So we'll have to wait and see how that turns out over the next year and what decisions are made.

Last month, we had a successful test with a ground-based interceptor. Most people are mesmerized by the interceptor hitting the target. I get mesmerized by the integration of sensors that are spread around the globe by the communications paths that connect them, the reliability of those communications paths to provide the real-time transmission of all that data, because we are literally operating across ten or eleven time zones and trying to integrate all that sensor data simultaneously, and getting a clear picture of what's being fired at us. I'm happy to report that during the last test we integrated a number of the sensors at the same time. We have a forward-based sensor integrated, a ship-based sensor integrated, and an upgraded early warning radar, a deal we integrated along with radar out at Shemya, Alaska and it worked. We got it into the fire control. It was able to develop its weapons task plan computer solution and execute the intercept. So from our perspective, especially the combatant commanders, because very few of them talk to me about probability of kill, they're really talking, how do we make this work across multiple combatant commanders, multiple time zones, all with different battle rhythms? How do we put all of this together? And again, a lot of this goes back to communications. We're reliant on terrestrial networks; we're reliant on SATCOM networks to get all this business done. It's only going to get more sophisticated and a little bit thicker as we deploy more of these sensors and shooters into other forward areas.

> "The systems I work in, the domains I work in with Space, Missile Defense, we're very communications dependent, and we're dependent on a global scale."

As we develop more sophisticated regional systems, the Army is developing a system called the Terminal High Altitude Area Defense system, and the Navy has the Aegis Ballistic Missile Defense System. These systems have capabilities now to cover more than your neighborhood, so they could roll into U.S. Central Command but actually protect U.S. European Command. In the deeper future they could roll into European Command and protect the United States. The communications and the command and control to do all that is going to have to be pretty sophisticated to make this happen so we can optimize the use of all of these sensors and all of these shooters spread around the globe. There is still so much work to be done there.

As we operate globally, it does require a new concept. It requires a new way of thinking and really the cyber business has helped us in Missile Defense tremendously. I think that the combatant commanders over the past couple of years have realized, as all the briefers have come up and talked about it, that when we have a vulnerability in one area that we share that vulnerability. People have seen that in spades. In the missile defense business, they're starting to realize that it is interconnected and that now our adversaries will be launching missiles from one theater crossing over another theater potentially impacting on a third theater. So, we're trying to build a layered defense where the sensors and shooters act in unison and we optimize so we're not wasting our limited supply of interceptors. So, we're truly trying to tie together a global and a regional system into an integrated system across the entire globe.

We're working with the combatant commanders, and every time we go into a room with them, they all agree so much on everything; it makes my job really easy that they see it our way each and every time. Not really, because it is a new way of thinking, but frankly I think the cyber has opened some doors for us and people are realizing it.

There's always an argument about the need for ballistic missile defense. How much should the U.S. invest? I don't know the math off the top of my head, but if you look at the Missile Defense Agency budget of roughly $8 billion a year – another $2 billion across the services making it $10 billion, – I don't know what that computes to, two percent of the annual Department of Defense budget. Well, that's the debate. Does the country need to invest two percent, one percent, no percent, or five percent? I'm not sure, but what I can describe is, is it a problem out there? Is it growing? I think it is.

When we look at Iran and just North Korea alone, we can see some trends. According to the Jerusalem post, they say that Iran has tripled its long-range rocket arsenal in 2008. It says that Iran possessed 30 Shihab-3 missiles in the beginning of 2008 and currently the country claims to have over 100 long-range missiles. While the ability of the Islamic Republic to strike any point in Israel has long been known, "this latest buildup potentially points to an Iranian intent to launch or protract a counterstrike against those who seek to destroy its nuclear program," and that's a quote from the Jerusalem Post.

The former president of Taiwan stated earlier last year that China has some 1,328 missiles aimed at Taiwan. That's a bit excessive if you ask me. He also stated in that article that China is developing a maneuvering reentry vehicle, and in my view that's a proliferation concern if that technology gets out, it's a significant challenge for the United States.

The systems I work in, the domains I work in with Space, Missile Defense, we're very communications dependent, and we're dependent on a global scale. The information in the missile defense business and the Space business has to be passed in near real-time. We can't have large data latencies in the business that we're doing, so just like everybody else; our dependency seems to just keep growing. We get concerned about the cyber threats, and I think there was some recent discussion about nations that are really focused on what we're doing in ballistic missile defense. I would suspect there are other nations that have said publicly that they look at our networking and our cyber capability looking for vulnerabilities, so, many of our systems are tied to that network. Our goal at USASMDC/ARSTRAT is to ensure that we deliver the warfighter what they need, whether we're talking down at the tactical level in Afghanistan or Iraq, or we're talking about protecting the United States or our allies against long-range missiles. With that I'll conclude and take your questions.

The Air Force is kind of linking the Space and cyber missions. I think the Navy has them under one commander. What is the Army's view of that for future potential reorganizations?

I think the Army is going to see it the same way. I think it's going to be a unified effort. I have to report to U.S. Strategic Command on behalf of the Army. The deputies for cyber report through me for any work I do with U.S. Strategic Command, and that's the Intelligence and Security Command as well as our Network Operations Command. We're going to go the path the Joint world is taking and pushing us in that direction. I think they're inextricably linked and we can't really pull them apart.